

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### u12 Radians, Degrees, and Arc Length EXAM (version 136)

1. Write in the angles, in **degrees and radians**. Please put the angles in their standard locations, and put radians in exact, and simplified, form.



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2. On the circle below, draw a sketch of a  $-420^\circ$  angle in standard position. Include the initial ray, the terminal ray, and the spiral arrow indicating direction and full extent of the angle. For your reference, the first few multiples of 360 are 360, 720, 1080, and 1440.



3. On the circle below, draw a sketch of a  $-\frac{9\pi}{4}$  angle in standard position. Include the initial ray, the terminal ray, and the spiral arrow indicating direction and full extent of the rotation.



4. A circle, a central angle, and the subtended arc are drawn. The arc length is  $L$  meters. The central angle is 4 radians. The radius is 5 meters. Find  $L$ .